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ARMY Declass/Release Instructions On File

MEMORANDUM FOR: Assistant Chief of Staff for Intelligence,
United States Army

SUBJECT: Lessons from Experience with Aerial
Surveillance and Target Acquisition in Vietnam

    1.   From 6 August 1964 until 27 August 1965 the under-signed served as Chief of the Reconnaissance and Photo Intelligence Division under the Assistant Chief of Staff, J2, U.S. Military Assistance Command, Vietnam (see Annex A for a resume of experience involving surveillance and target acquisition during this period). The experience demonstrated that there were a number of lessons to be learned that applied to three separate but related subjects. These are as follows:

        a.   Techniques of surveillance and targeting.

        b.   Air-ground doctrine.

        c.   Counterinsurgency doctrine.

(See Annex B for a discussion of the implications of these lessons on Army organization and operating procedures.)

    2.   The undersigned would be pleased to assist in any further discussion of these problems by the Army.

3.   Recommendations. It is recommended that:

a.   The Army initiate a review of air-ground doctrine with a view to incorporating changes suggested by the experience in Vietnam.

b.   The Army organize, equip, and train an aerial surveillance and target acquisition battalion along the lines summarized in Annex B.

c.   The Army incorporate the experience outlined in Annexes A and B in the Army counterinsurgency doctrine.

                                William A. Tidwell
                                Colonel   USAR

Attachments:
  Annexes A and B

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Resume of Experience with
Aerial Surveillance and Target Acquisition in Vietnam 1964 - 1965

1.   Turning points in history are not always as clearly
defined as the battle of Waterloo or the invasion of Normandy. For
this reason it might be of use to later historians for us to postulate
and describe the evidence that suggests that the 13th of November 1964
might well mark the beginning of the decline of "Wars of National
Liberation." On that date ten A-1H fighter bombers belonging to the
Vietnamese Air Force successfully attacked a small Viet Cong base a
few miles to the west of Saigon.   This was the first attack launched
against guerrilla base areas in South Vietnam on the basis of newly
developed targeting techniques which have subsequently been used
with increasing effect to harass the Viet Cong in areas which they
previously occupied with impunity.

2.   Many scholars have discussed the interrelationship of
war and politics. It is desirable to describe in greater detail certain
military developments in South Vietnam in order that their full
political significance may be understood.

3.   It is well known that the United States Military Assistance
Command under General William C. Westmoreland and the South

Vietnamese military establishment have been fighting an enemy whose

basic strategy is derived from the earlier theories of Mao Tse Tung

with elaborations devised by General Giap and other Communist

leaders of the war against the French in Indochina. According to their

theory, small guerrilla forces base themselves in remote areas where

terrain, vegetation, and the lack of communications make it difficult

for conventional military forces to attack them. These base areas are

used as sanctuaries as the guerrilla forces extend their operations into

more populated areas, and as the guerrillas win support among the

population, the bases are used for the collection of supplies and as

training areas for newly recruited guerrilla units. As the guerrilla

force increases in numbers, and as it establishes more reliable sources

of weapons and ammunition, some of the guerrilla units are converted

into small regular military units with professional training. If the

guerrilla campaign continues successfully, the small regular units

are pulled together to form larger regular units. The regular units

may emerge from the base areas from time to time to engage in

combat for training purposes as well as to supplement the harassment

campaign of the guerrilla forces, but in general, great care is

exercised to avoid committing these regular units to combat in circum-

stances that might result in the destruction of the unit. The campaign

of guerrilla harassment and the concurrent accretion of regular units continues until a regular military establishment has been created insufficient strength to enable it to emerge from its base areas and destroy the regular military forces of the Government. (At the end of Annex A are selected extracts from an article by Lin Piao, Minister of Defense of Communist China, published on 2 September 1965, which shows something of the current Communist attitude toward the war in Vietnam and the importance they place on bases in their theory of warfare.)

4.   The Communists have followed this strategy in South Vietnam, beginning about 1960 with a small number of guerrilla forces held over from the days of the war against the French. The Viet Cong established themselves in several large remote areas including the notorious War Zones C and D and the Do Xa region. This guerrilla force was expanded rapidly on the basis of captured materiel and the guerrillas established themselves in a large number of additional base areas of varying sizes. At the same time, the North Vietnamese began to send parties of technicians and organizers and small quantities of critical equipment into South Vietnam either by sea or through the jungles of Laos. These cadres began to organize the regular "main force" Viet Cong units. At first in company strength and later in battalion strength, these units from time to time emerged from their base areas to conduct an ambush, to attack a hamlet, or to overrun

some small Vietnamese army post. These operations were usually rehearsed in great detail and provided excellent training for the troops involved at relatively small risk. Later, as more regular troops were organized, military operations began to involve several battalions and a fairly sophisticated degree of staff coordination. All of these attacks added to the disrupting effect of the guerrilla campaign. The recipients of these attacks often could not tell whether they were being attacked by guerrilla or regular forces, and the effect was to increase the reputation of the guerrillas and to contribute to the idea that the guerrilla forces will be the inevitable victor in the struggle with the Government. This idea was reinforced by the examples of the Chinese and North Vietnamese successes based on similar strategy.

5.   There are two glaring weaknesses in the Communist strategy. The first is that regular units engaged in combat against conventional forces require crew-served weapons and consume tremendous quantities of ammunition while in combat. This means that no matter how Spartan the regular force may be in other respects it must have a clearly established source for a reasonably homogeneous family of weapons and it must have sufficient ammunition on hand or in a well organized pipeline to support combat expenditures. The second weakness is the dependence of both guerrilla's and main force units on

freedom from attack in their base areas. The problems of recruiting,
organizing, and training effective units cannot be solved satisfactorily
if the unit is under constant harassment. In the case of the Viet Cong
guerrilla, this situation is compounded by his dependence upon locally
produced food. A large proportion of the time of both guerrilla and
main force units is devoted to growing food for their own consumption.
This dependence on local food commits them to a geographic location
for an extended period of time. If they are forced to move, they run
the risk of losing the food in which they have already invested a
considerable effort and which they must have to support their future
operations.

6.   These considerations led General Westmoreland in
mid-1964 to order the development of a campaign of harassment directed
against Viet Cong areas. This was no easy problem since the Viet Cong,
being aware of the importance of their base areas, had gone to great
lengths to conceal and camouflage their activities. Each military
problem, however, has to be solved as it occurs. Just as the British
learned to combat the German submarines in World War I and the United
States Cavalry learned to fight the Plains Indians in the 1870s, it was
necessary to learn how to solve this new military problem. This was
finally done by combining old and established intelligence techniques

with new methods of reconnaissance to pinpoint the location of Viet Cong

activity.

7.   The basic principle of this new method of identifying

targets is to use basic area coverage of conventional black and white

photography as the focal point for organizing information from other

sources in order that information which indicated current Viet Cong

activity might lead the image interpreter to the photography most likely

to reveal the location of the Viet Cong unit, camp, or base that could be

attacked.   The principal sources of information concerning current

Viet Cong activity were:

> a.   Airborne radio direction finding.
>
> b.   Infrared reconnaissance.
>
> c.   Reports of aircraft hit by enemy ground fire.
>
> d.   Reports of visual contact with the Viet Cong

from aerial surveillance and ground force elements.

In all cases it is necessary to identify the location of the reported Viet Cong

activity in the conventional black and white photography and interpret the

photography to identify the point at which an attack by air strike or

artillery would be most likely to hit the Viet Cong.   This new method

of target selection was first used on 13 November 1964.   During the

following months it was tried on other occasions and while not infallible

proved to be a great improvement over previous procedures. Sufficient

confidence was established in the new methods to justify a great

expansion in the number of aircraft used in attacks against the Viet Cong.

By February 1965 large numbers of U.S. aircraft were being committed in

this campaign in support of the limited resources of the Vietnamese

Air Force. Many Viet Cong base areas were attacked for the first time

since the beginning of the Viet Cong insurrection.

8.   As in most strategic bombing campaigns, the effects of

this program are cumulative, and for some time even the Viet Cong

appeared to have been unaware that something new and different was

happening to them. As time went by, however, it became more and

more obvious that the campaign was achieving significant results.

This was reflected first in the complaints of Viet Cong prisoners who

expressed fear of air attack. The prisoners also began to complain

of the lack of food and the numbers of prisoners themselves, as well

as an increase in the number of defectors, began to reflect the

increased pressure caused by the campaign. In most cases it is not

possible to check the results of these air strikes immediately on the

ground because they are conducted against targets in remote areas.

In many cases, however, stories eventually filter out through the

grapevine telling of the numbers of Viet Cong killed at such and such

a place on such and such a date. These stories not only provide

useful information concerning the effects of the campaign but they also tarnish the myth of final Viet Cong victory. This in turn increases the difficulty of the Viet Cong in getting support from the populace.

9.   In June 1965 the campaign was reinforced by the introduction of B-52 bombers. These airplanes, although designed for a different purpose, have a unique capability for laying down a heavy pattern of bombs, and this pattern bombing is an ideal method of attack against Viet Cong installations scattered in heavy jungle.

10.   Throughout the campaign General Westmoreland and his staff have been constantly aware of the effects of this campaign on the uncommitted civilian population. Fortunately, the great majority of targets are, by Viet Cong choice, in remote areas where there is little civilian population. Extreme care has been used to see that civilian villages are not hit. Strikes are conducted under the control of Forward Air Controllers who fly in light aircraft close to the target to make sure that the strikes are placed on the target and not against peaceful villages. The press has mistakenly associated civilian casualties with this large scale campaign against the Viet Cong base areas. Unfortunately, since the beginning of the war civilians are and have been killed or injured by bombs from aircraft as well as by bullets and shells from rifles, machine guns, and mortars.

The great majority of these casualties occur in conjunction with

fighting between units on the ground. Aircraft are often called in to

provide close support to Vietnamese and U.S. forces engaged against·

the Viet Cong. Even though these attacks are directed by a Forward

Air Controller, it is sometimes impossible to avoid causing civilian

casualties in these circumstances.

11.   The United States and Vietnames Air Forces are

conducting a strategic campaign against the Viet Cong that may well

result in the complete disruption of the Viet Cong base system that

has been developed over the past five years. If this is the result of

the campaign, small groups of Viet Cong guerrillas can probably

continue to operate, but in the long run it will probably be impossible

for the Viet Cong to continue to maintain their Main Force units intact.

This will have the effect of cutting off the logical progression from

guerrilla unit to regular army envisaged in the doctrine of "Wars

of National Liberation." Once that stage has been reached the

counterinsurgency doctrine developed by the United States, involving

political and economic action in conjunction with police and other

local security measures, should eventually be able to restore South

Vietnam to sufficient stability to enable the South Vietnamese people

to make progress in developing their natural resources and restoring

the damage caused by the Communists.

12.   If this is the result of current U. S. efforts in Vietnam,

we will have broken the myth of infallibility of the Mao technique.

More important, however, we will have demonstrated the basic flaw

in the theory. We will have demonstrated that guerrilla forces cannot

establish themselves in invulnerable base areas and we will have

developed techniques that will permit ourselves and our friends to

hunt down the guerrillas if any should be so foolish as to attempt this

type of warfare. It is interesting to speculate concerning the fate of

history if this technique had been developed earlier. Castro's small

forces in eastern Cuba, for example, might well have been wiped out

in 1958 and the war in Malaya might well have ended much sooner.

On the basis of this analysis Comrade Mao Tse-tung formulated the strategy for a protracted war. China's war of resistance would be protracted and prolonged efforts would be needed to gradually weaken the enemy's forces and expand our own so that the enemy would change from being strong to being weak and we would change from being weak to being strong and accumulate sufficient strength finally to defeat him. Comrade Mao Tse-tung pointed out that with the change in the balance of forces between the enemy and ourselves the war of resistance would pass through three stages, namely, the strategic defensive, the strategic stalemate, and the strategic offensive. The protracted war was also a process of mobilizing, organizing, and arming the people. It was only by mobilizing all the people to fight a people's war that the war of resistance could be persevered in and the Japanese aggressors defeated.

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To rely on the peasants, build rural base areas, and use the countryside to encircle and finally capture the cities--such was the way to victory in the Chinese revolution.

* * * * *

Since China's key cities have long been occupied by the powerful imperialists and their reactionary Chinese allies, it is imperative for the revolutionary ranks to turn the backward villages into advanced, consolidated base areas, into great military, political, economic, and cultural bastions of the revolution from which to fight their vicious enemies who are using the cities for attacks on the rural districts, and in this way gradually to achieve the complete victory of the revolution through protracted fighting; it is imperative for them to do so if they do not wish to compromise with imperialism and its lackeys but are determined to fight on, and if they intend to build up and temper their forces, and avoid decisive battles with a powerful enemy while their own strength is inadequate.

Experience in the period of the second revolutionary civil war showed that, when this strategic concept of Comrade Mao Tse-tung's was applied, there was an immense growth in the revolutionary forces and one Red base area after another was built. Conversely, when it was violated and the nonsense of the "left" opportunists was applied, the revolutionary forces suffered severe damage, with losses of nearly 100 percent in the cities and 90 percent in the rural areas.

During the war of resistance against Japan, the Japanese imperialist forces occupied many of China's big cities and the main lines of communication, but due to the shortage of troops they were unable to occupy the vast countryside, which remained the vulnerable sector of the enemy's rule. Consequently, the possibility of building rural base areas became even greater. Shortly after the beginning of the war of resistance, when the Japanese forces surged into China's hinterland and the Kuomintang forces crumbled and fled in one defeat after another, the Eighth Route and New Fourth armies led by our party followed the wise policy laid down by Comrade Mao Tse-tung and boldly drove into the areas behind the enemy lines in small contingents and established base areas throughout the countryside. During the eight years of the war, we established 19 anti-Japanese base areas in northern, central, and southern China. With the exception of the big cities and the main lines of communication, the vast territory in the enemy's rear was in the hands of the people.

* * * * *

The base areas established by our party became the center of gravity in the Chinese people's struggle to resist Japan and save the country. Relying on these bases, our party expanded and strengthened the people's revolutionary forces, persevered in the protracted war, and eventually won the war of resistance against Japan.

* * * * *

Comrade Mao Tse-tung has provided a masterly summary of the strategy and tactics of people's war. You fight in your way and we fight in ours; we fight when we can win and move away when we can't.

In other words, you rely on modern weapons and we rely on highly conscious revolutionary people; you give full play to your superiority and we give full play to ours; you have your way of fighting and we have ours. When you want to fight us, we don't let you and you can't even find us. But when we want to fight you, we make sure that you can't get away and and we hit you squarely on the chin and wipe you out.

However superior he may be in technical equipment and whatever tricks he may resort to, the enemy will find himself in the passive position of having to receive blows, and the initiative will always be in our hands.

* * * * *

U.S. imperialism relies solely on its nuclear weapons to intimidate people. But these weapons cannot save U.S. imperialism from its doom. Nuclear weapons cannot be used lightly.

U.S. imperialism has been condemned by the people of the whole world for its towering crime of dropping two atom bombs on Japan. If it uses nuclear weapons again, it will become isolated in the extreme. Moreover, the U.S. monopoly of nuclear weapons has long been broken; U.S. imperialism has these weapons, but others have them too. If it threatens other countries with nuclear weapons, U.S. imperialism will expose its own country to the same threat. For this reason, it will meet with strong opposition not only from the people elsewhere but also inevitably from the people in its own country. Even if U.S. imperialism brazenly uses nuclear weapons, it cannot conquer the people, who are indomitable.

However fully developed modern weapons and technical equipment may be and however complicated the methods of modern warfare, in the final analysis the outcome of a war will be decided by the sustained fighting of the ground forces, by the fighting at close quarters on battlefields, by the political consciousness of the men, by their courage and spirit of sacrifice. Here the weak points of U.S. imperialism will be completely laid bare, while the superiority of the revolutionary people will be brought into full play. The reactionary troops of U.S. imperialism cannot possibly be endowed with the courage and the spirit of sacrifice possessed by the revolutionary people. The spiritual atom bomb which the revolutionary people possess is a far more powerful and useful weapon than the physical atom bomb.

Vietnam is the most convincing current example of a victim of aggression defeating U.S. imperialism by a people's war. The United States has made South Vietnam a testing ground for the suppression of people's war. It has carried on this experiment for many years, and everybody can now see that the U.S. aggressors are unable to find a way of coping with people's war. On the other hand, the Vietnamese people have brought the power of people's war into full play in their struggle against the U.S. aggressors. The U.S. aggressors are in danger of being swamped in the people's war in Vietnam. They are deeply worried that their defeat in Vietnam will lead to a chain reaction. They are expanding the war in an attempt to save themselves from defeat. But the more they expand the war, the greater will be the chain reaction. The more they escalate the war, the heavier will be their fall and the more disastrous their defeat. The people in other parts of the world will see still more clearly that U.S. imperialism can be defeated, and that what the Vietnamese people can do, they can do too.

History has proved and will go on proving that people's war is the most effective weapon against U.S. imperialism and its lackeys. All revolutionary people will learn to wage people's war against U.S. imperialism and its lackeys. They will take up arms, learn to fight battles and become skilled in waging people war, though they have not done so before. U.S. imperialism, like a mad bull dashing from place to place, will finally be burned to ashes in the blazing fires of the people's wars it has provoked by its own actions.

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Lessons from Experience with

Aerial Surveillance and Target Acquisition in Vietnam

I. PROBLEM

A. Several lessons may be learned from Army experience

in Vietnam which may well affect doctrine, organization, and

procedures for aerial surveillance and target acquisition. Most of

the lessons stem from a need occurring in any war involving ground

forces to find enemy targets that should form part of the commander's

knowledge of the enemy situation and which should be considered by

him for specific attack by:

      1. Supporting Air;

      2. Artillery;

      3. Ground Operations.

B. This need has become increasingly important because

technological developments have made it possible for the enemy to

strike from greater distances than formerly and to disperse his

forces for concealment and security to areas far beyond the cognizance

of front line troops.

C. There are a large number of places in the world where

the U.S. may conceivably be involved against a guerrilla enemy, and

the guerrilla, by axiom, seeks to operate in those areas where it is

most difficult for conventional forces to find him.

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D.   There is a need, therefore, to develop our techniques of reconnaissance to overcome increasing concealment and dispersal on the part of the enemy, particularly that which takes advantage of natural features such as terrain and vegetation.

II.   THE ARMY'S ROLE

A.   The Communists have made an intensive effort in recent years to extend knowledge of their guerrilla doctrine. There have been many reports of training schools for guerrilla leaders behind the Iron Curtain and in Cuba. There is considerable evidence that several hundred men from all over Latin America have been trained in guerrilla theory and techniques in Cuba.

B.   Communist-influenced guerrilla or irregular forces have been encountered in the Congo, Dominican Republic, and various other places in Latin America and Africa. There is no way to predict political developments that might involve the U.S. directly in any of these situations, but each of them must be recognized as a potential situation in which the U.S. Army may be involved directly or indirectly. The manner of Army involvement conceivably might take various forms. For example:

     1.   The U.S. involvement might be limited to covert support of counterguerrilla forces. In such circumstance it would be necessary to provide aerial surveillance and target acquisition elements to operate

under civilian cover. It would be almost impossible in

peacetime for any civilian organization to provide

equipment and personnel, train them, and hold them in

readiness for contingency use in the event of hostilities.

In the face of a war of this nature, the Army's role would

probably be to provide equipment, training, developed

doctrine and techniques, and trained manpower in support

of the organization primarily responsible for the conduct

of covert support to the counterguerrilla forces (in

Indonesia, for example).

    2.   It is possible that a situation might develop

in which the U.S. support against guerrilla operations

would be desired by the local government but not admitted

publically because of political repercussions. In such a

circumstance it might be desirable to deploy U.S. Army

elements in uniform under ostensible cover of a training

mission or some other legitimate military function but

with the actual mission of conducting aerial surveillance

and identifying guerrilla targets for attack by friendly

forces.

    3.   There is also the possibility that U.S.

Armed Forces might be involved in a fully overt war

against guerrilla forces such as that currently under way

in Vietnam. In such a situation the Army would require

aerial surveillance and target acquisition elements to

use and complement the results of reconnaissance

performed by the U.S. Air Force elements.

4.   There is also the possibility that the U.S.

may become involved in a war against conventional

military forces. There again, it might be necessary for

U.S. Army aerial surveillance and target acquisition

elements to use and complement reconnaissance

performed by the U.S. Air Force elements.

III.   LESSONS FROM VIETNAM

A.   On the basis of experience in Vietnam, it would appear

that there is a defect in current doctrine concerning the employment

of Tactical Air. According to current doctrine, the area deep behind

enemy lines is the responsibility of Strategic Air and Tactical Air is

to be employed to:

1.   Gain air superiority over the battle area;

2.   Isolate the battlefield; and

3.   Provide close support to U.S. ground forces.

This statement of the responsibilities of Tactical Air sounds compre-

hensive, but let us examine its implementation in greater detail.

B.   In carrying out the mission of gaining air superiority,

part of the Tactical Air Force would be required for employment in

an air-to-air role. In addition, however, strikes against air bases
and related supporting facilities would be appropriate. These
strikes would probably take place behind or in the rear portion of
the battle area. It would appear to be appropriate for the air
component to have the primary responsibility for selecting the
targets to support this particular activity.

       C.   In carrying out its mission to isolate the battlefield
(i. e., interdiction), Tactical Air would be used primarily against
lines of communication and against targets of opportunity that might
be discovered as a result of armed reconnaissance. By the nature
of the mission a large proportion of the targets attacked would tend
to be toward the rear of the enemy's combat zone. Again it would
appear to be appropriate for targeting for this mission to be
performed by the Air Force, so long as the interdiction program
were coordinated with the plans of the ground force commander.

       D.   The targets struck in the course of carrying out the
close support mission would tend to be near the Forward Edge of the
Battle Area. By its nature the strikes in this last category are
usually delivered as the result of the operations of a request system
originating with troops on the ground. Strikes are usually delivered
against targets that can be seen from the front lines or identified by
short range reconnaissance assets under the direct control of the
ground force commander in contact with the enemy. There is

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Enemy Territory

Friendly Territory

Strategic Campaign

Enemy XI

Tactical-Air Superiority

Air Bases, etc.

L.O.C., etc.

Tactical-Isolation of Battlefield

Tactical-Close Support

Enemy installations, supplies, and troops not engaged against friendly forces

Area in which the Strategic battlefield campaign should be conducted.

Enemy troops engaged against friendly forces

FEBA

Air Force does targeting for Strategic Air Campaign and for Air Superiority and Interdiction missions.

Army should do targeting for close support and strategic battle-field campaigns.

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relatively little opportunity for preplanned strikes, and there is

normally no staff element in either the Army or Air Force with

adequate analytical and imagery interpretation resources to

systematically develop targets that are in the enemy's combat

zone but outside of immediate contact with troops at the Forward

Edge of the Battle Area.

E.   If the missions described above are plotted out

schematically, it becomes clear that there is a gap in responsibility

between the interdiction strikes placed at the rear of the enemy's

combat zone and the close support missions placed at the front of

the enemy's combat zone.   Furthermore, no single agency has

clear responsibility for the conduct of what might be called a

strategic battlefield campaign employing air strikes, Army missiles,

and artillery in an integrated program of destruction or harassment

aimed at enemy forces that may be in the combat zone but which are

not involved in direct combat with U.S. ground force elements.

F.   In Vietnam this problem was complicated by the basic

ground rules for the clearance of air and artillery strikes, by the

need to persuade rather than command allied ground force commanders

to authorize strikes against enemy targets, and by the lack of any

clear-cut responsibility for developing targets for pre-planned

strikes.   The problem was solved in part initially by the creation of

an ad hoc joint organization known as the MACV J2 Target Research

and Analysis Center. This organization successfully applied both

new and already established techniques employing aerial photography,

radio direction finding, infrared reconnaissance, and collateral

information to identify a large number of possible Viet Cong targets.

A large number of these possible targets were attacked by either

air or artillery and a few were attacked by ground operations. The

capabilities of the organization, however, were never fully integrated

into the Tactical Air Support System because of the apparent defect

in doctrine which caused that system to be focused almost entirely

on the close support mission, with the result that it was organized

to respond primarily to requests originating with front line troops.

      G.   On the basis of the experience cited above, it would

appear desirable to have established doctrine reflect the existence

of a requirement for a Strategic Battlefield mission in addition to

those already established. It would also appear to be appropriate

to assign primary responsibility to ground force elements for

developing the targets to be attacked in accordance with this campaign.

It would also appear logical to assign to the ground force commander

the responsibility for deciding the means to be employed in attacking

a given target and empower him to direct air attacks against those

targets deemed by him to be most appropriate to be attacked by

Tactical Air.

H.　　In addition to the organizational experience cited above,

the U.S. Military Assistance Command, Vietnam also made some

technical developments in the use of reconnaissance. It was found,

for example, that if the results of infrared reconnaissance were

plotted onto existing recent conventional photography of an area, it

then became possible to interpret and derive additional significance

from the conventional photography. Results of airborne radio direction

finding were also handled in this manner. As a result of this experience,

MACV developed a technique for conducting the various forms of

reconnaissance so as to concentrate on an area believed to be occupied

by the Viet Cong so that image interpreters and target analysis

personnel would be able to establish patterns of Viet Cong activity

and have a maximum opportunity to identify possible strike targets

in the conventional photography. MACV was able to organize this

reconnaissance so that infrared missions could be flown in the early

evening and the results compared with existing black and white

photography, possible targets identified, target mosaics prepared

and annotated, and the necessary copies of the target mosaics gotten

into the hands of the appropriate ground force elements in time to

permit an air strike to be conducted at daylight the following morning.

MACV was also able to work out a method by which side-looking radar

aircraft could be integrated into a quick-reaction strike capability.

This involved training the radar operator to interpret geographic

coordinates from the radar film record while in the aircraft. The result of all of these technical developments was to make it possible for MACV to conduct a heavy campaign of harassment directed against Viet Cong in the general battle area but not directly engaged against friendly troops.

IV.   THE NEED FOR A NEW ORGANIZATION

If, as stated above, U.S. military doctrine should provide for the conduct of a strategic battlefield mission, there also exists a requirement for a reconnaissance and targeting organization to support such a campaign. To be effective the reconnaissance program must be conducted in such a way that it can identify possible targets and put the necessary information and target materials into the hands of those responsible for conducting operations in sufficient time to enable the targets to be struck before they can move. This means that a number of complicated activities must mesh together with absolute precision. For this reason it is essential that there be created a single organization having under its control all of the elements required to permit it to carry out its mission of identifying possible enemy targets and providing the necessary information and targeting materials to action elements in the most timely manner possible.

V.   TECHNICAL CONSIDERATIONS

A.   The first consideration in developing an organization for targeting is the requirement for speed. A targeting operation

against fixed installations can afford to move at a measured speed

and with factory-like efficiency. On the other hand, if the targeting

operation is being aimed against troops and mobile equipment, the

system must operate with a speed that will permit the necessary

attack to be launched in time to catch the troops or mobile forces in

the locations at which they have been discovered.' Such speed may

well require a redundancy of equipment and personnel, and procedures

that are not efficient in an economic sense. For example, there must

be adequate photo processing equipment to process reconnaissance

film immediately without having to wait in the backlog that would be

required if the photo processing machine were to be used to its full

capacity. In other words, if two or more reconnaissance aircraft

delivered their film simultaneously, the film should be processed

simultaneously and not stacked up in some priority sequence to be

processed by a single machine. In general, maximum efficiency in

the use of machinery is inherently incapable of delivering maximum

speed in a targeting operation.

     B.   One of the critical decisions that has to be made at

an early point in planning a targeting operation is whether the image

interpreters will work from prints or transparencies. This decision

is influenced by the need for target materials. If these are required,

it will be necessary for the analyst to work on the prints that can be

used immediately as target materials or provided with the immediately

available laboratory and reproduction facilities to make it possible to

produce target materials from transparencies within a matter of

minutes. In general, the level of training and experience of the

average image interpreter is not good enough at this point in time to

enable him to work satisfactorily from a negative. This is further

complicated by the fact that targeting may well involve terrain and

cultures not familiar to the image interpreter and of such complexity

that months of experience would be required before he would learn

them thoroughly. In such a circumstance the interpreter should be

given all assistance possible. It seems fairly clear from the

experience of the past few years in the U.S. intelligence community

that a duplicate positive can give the image interpreter the best

chance to perform sound interpretation. It would seem appropriate,

therefore, to plan the targeting system around the use of duplicate

positives as the primary medium for image interpretation. This in

turn will have direct consequences in the equipment and procedures

acquired for the rapid production of target materials.

C. If the enemy is conscious of the need for concealment

and is well trained in camouflage and concealment techniques, it will

be difficult for the targeting operation to operate on the assumption

that targets can be selected by direct identification of enemy activity.

(i.e., one cannot "acquire" a target. One must perform an elaborate

analysis to deduce its probable location). The more difficult it is to

see the enemy directly, the more important it is to be able to deduce

his location by indirect methods. In general, these indirect methods

fall into two categories, namely, the use of technical sensors and the

detection of changes in two or more sets of photography that indicate

enemy activity. Both of these indirect methods require that the image

interpreter have on hand recent high quality photographic coverage of

the areas in which he is looking for enemy activity. This requirement

means that the reconnaissance system must be capable of generating

large quantities of area coverage photography, probably on a continuous

basis. This area coverage photography provides the focal point for all

of the other information that can be brought to bear to detect enemy

activity and select targets that can be recommended for strike. This

is the opposite of the conventional reconnaissance technique that begins

with the generally known target location and requires relatively small

area coverage of the known target and its immediately surrounding

territory. The basic area coverage photography can be used in the

indirect identification of targets in the following ways:

> 1. Visual reconnaissance can report probable
>
> enemy activity at a particular location. The most recent
>
> area coverage available can then be studied immediately
>
> to see if the report of enemy activity will permit the
>
> interpreter to put new meaning into the things that he sees
>
> in the photography.

2.   Current ad hoc reconnaissance photography
can be compared with the most recent basic coverage of
the same area to see if recent changes in terrain, vegetation,
cultural features, etc., indicate probable enemy activity.

3.   The results of radio direction finding can
be plotted on the most recent area coverage available and
the photography interpreted to see if the presence of an
enemy radio at a given location can assist the image
interpreter to identify the probable location of the unit
supported by the radio.

4.   The results of infrared reconnaissance can
be plotted on basic area coverage to permit the interpreter
to discount those infrared returns for which a peaceful
explanation is evident in the photography, eliminate false
returns, and to identify those returns which may be
significant as indicating current enemy activity.

5.   The results of reconnaissance by side-
looking radar, particularly those returns detected by the
Moving Target Indicator, can be plotted on the basic
area coverage to assist the image interpreter in deriving
new meaning from the photography.

6.   The area coverage also provides a locational
background against which collateral information from

clandestine agents, prisoner interrogation, and other

human sources can be indexed to assist the interpreter

in identifying probable enemy activity in the photography.

In theory it would be possible for the image interpreter to detect some

probable enemy targets in spite of camouflage and concealment by

immediate thorough scan of all area coverage photography obtained.

In practice, however, the volume of such photography is normally far

in excess of that which can be handled by the numbers of trained image

interpreters likely to be available. While it is highly desirable to scan

all such photography, the best results can be obtained when other

information indicating current enemy activity can be used to lead the

image interpreter to the specific photography that requires intensive

analysis.

D.   The reconnaissance and targeting concept outlined above

contains certain implicit requirements for equipment which must be

taken into consideration in drawing up the TO&E for the unit

implementing the concept. The main considerations are:

1.   <u>Aircraft.</u> It is necessary to have

reconnaissance aircraft capable of providing large

quantities of photography covering broad areas on the

ground. The photography required would generally

fall between the scales of 1:3,000 and 1:5,000. A

large format for the photography is desirable to

simplify the problem of making target materials.

9x18 format is probably the best, but 9x9 would be

satisfactory. In addition, there should be a capability

to take high quality stereo photography of selected

smaller areas on an ad hoc basis. A smaller format is

satisfactory for this purpose, but the larger format

would do just as well if adequate stereo quality can be

obtained. At the present time the aircraft most likely

to perform the broad basic coverage mission are in the

inventory of the U.S. Air Force. Suitable aircraft

performing the ad hoc reconnaissance mission are also

in the Air Force inventory, but the Army Mohawk can

also perform this mission and other aircraft within the

weight limitations of Army aircraft could probably be

developed to perform this role. The most suitable

aircraft for the direction finding role appear to be the

Army L-20 and L-23. Other aircraft could probably be

configured to perform the DF mission, but the smaller

aircraft in the U.S. Army inventory seem to be the

most suitable. Light observation of the O-1 type are

also necessary to perform visual surveillance. Most

of the Army aircraft mentioned above could perform the

courier role required to deliver target materials and

photographic prints to ground commanders and forward

air controllers.

interruption by the requirement for immediate scan of

new photography. There should also be adequate

enlargers, copy cameras, and photo reproduction

equipment to permit the rapid production of target

materials in substantial volume.

    4.   <u>Communications.</u> In addition to the

capability to deliver target materials, the unit must

have its own secure communications to provide

immediate contact with troop commanders and forward

air controllers, since much of the information derived

from the analysis of photography can be reported in

textual format. Secure communications are also

required in order that the unit may receive all available

intelligence from non-reconnaissance sources in order

that the unit may be fully informed of the intelligence

situation and may conduct its search for targets in the

light of the best information available concerning enemy

activity.

E.   Although the unit performing target identification and

analysis must have all of the collateral intelligence available to assist

it in its task, the unit will also require additional intelligence support

and guidance that it cannot perform for itself. Presumably the

intelligence component of the next superior headquarters would have

available to it a more fully rounded understanding of the intelligence situation. There should be a close working relationship between the organization performing the targeting function and its superior headquarters in order that the targeting organization can focus on those areas of most immediate importance to the current military situation and the operational plans of the commander. In addition, there is likely to be intelligence of such sensitivity that it cannot be made available directly to the targeting organization. The higher headquarters must assume the responsibility of integrating such sensitive intelligence and providing guidance to the targeting organization in the light of the resulting knowledge.

F. Inasmuch as the identification of possible enemy targets involves a number of highly technical considerations not understood by the average field commander or staff officer, it is important that the targeting organization have adequate competent liaison personnel to maintain contact with field headquarters and strike elements being supported in order to explain the rationale behind the selection of specific targets and to assist the supported units in preparing plans for attacks against the targets identified.

VI. ARMY AVIATION BATTALION, AERIAL SURVEILLANCE AND TARGET ACQUISITION (ASTA)

A. It is proposed that the Army provide for an integration of aerial surveillance and the analysis necessary to identify concealed

targets by organizing an Army Aviation Battalion, Aerial Surveillance

and Target Acquisition (ASTA) in accordance with the following

mission:

To support the ground force commander by identifying

targets for attack by air strike, artillery, or ground forces
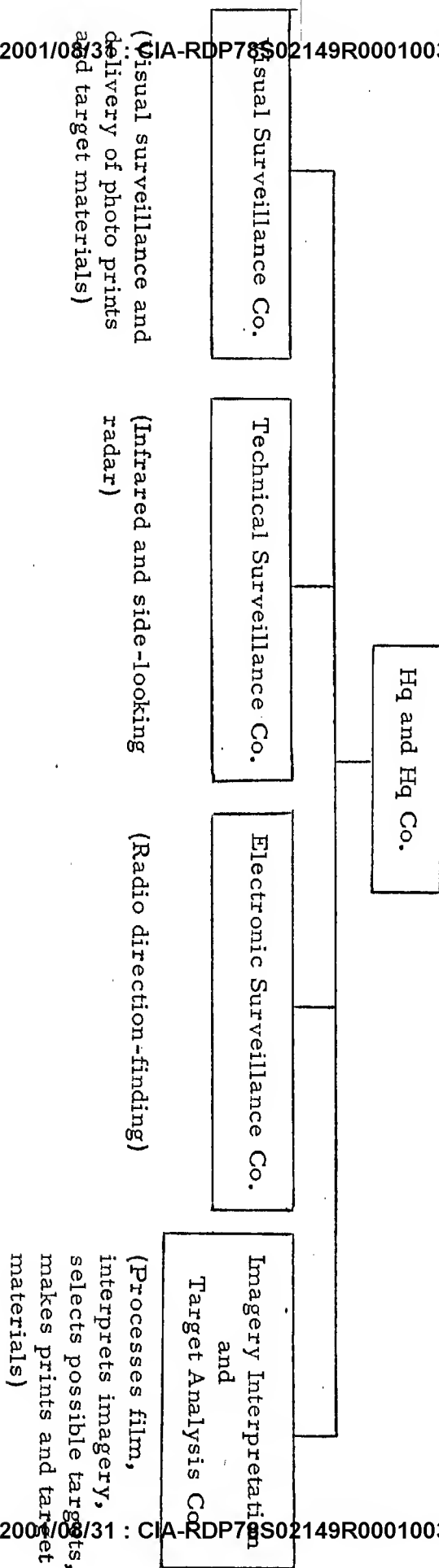
in the following situations:

a.   As the sole aerial surveillance

element in operations against guerrilla or other

irregular forces;

b.   As the U.S. Army aerial

surveillance element cooperating with comple-

mentary USAF reconnaissance elements in

operations against guerrilla or other irregular

forces;

c.   As a U.S. Army aerial surveillance

element cooperating with complementary U.S. Army

surveillance and USAF reconnaissance elements in

conventional military operations.

B.   It is proposed that the ASTA battalion be organized as

shown on the attached following chart:

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Army Aviation Battalion, Aerial Surveillance and Target Acquisition (ASTA)

Hq and Hq Co.

Visual Surveillance Co.

(Visual surveillance and delivery of photo prints and target materials)

Technical Surveillance Co.

(Infrared and side-looking radar)

Electronic Surveillance Co.

(Radio direction-finding)

Imagery Interpretation and Target Analysis Co.

(Processes film, interprets imagery, selects possible targets, makes prints and target materials)

C. The ASTA battalion should be under the operational control of the intelligence division of the principal headquarters responsible for the conduct of operations in the combat zone. This would permit the commander to insure proper coordination between intelligence and operations within his own staff. It would also fix responsibility for the conduct of an aggressive intelligence program leading to the identification of enemy targets, and would provide a means by which the commander could influence the course of the war above and beyond the influence that could be exerted through conventional ground operations.

D. It is important to fix responsibility for targeting for the following reasons:

1. To assure initiative in the analysis of intelligence information for the purpose of identifying targets.

2. To allocate assets to the task of target identification in a rational manner.

3. To provide an advocate at the staff level to represent a strategic battlefield campaign when deciding upon the allocation of strike forces.

4. To develop technical expertise and doctrine for the execution of an important and complex mission.

E.   Not only is it necessary to fix the responsibility for targeting, but it is also necessary to have a specialized organization carry out this function for the following reasons:

1.   To provide for the necessary technical expertise and technical equipment required in the conduct of analysis leading to target identification.

2.   To minimize friction between the collection, processing, and analytical phases of the cycle which results in target identification.

3.   To reduce the time involved in target identification to an absolute minimum to make it possible for the techniques to be employed against enemy forces that may move from their present location with no prior warning.